

**COMMUNICATION TERMINAL EQUIPMENT FOR WIRELESS
COMMUNICATION WITH TRANSMISSION/RECEPTION BASE
STATIONS OF DIFFERENT COMMUNICATION SYSTEMS**

The invention is directed to a communication terminal equipment for wireless communication with transmission/reception stations of communication systems. Such communication terminal equipment are known and work, for example, according to a cordless communication standard such as, for example, DECT or according to a mobile radio telephone standard such as, for example, one of the standards GSM, DCS-1800 or CDMA. In addition to communication terminal equipment that communicate on a radio basis, there are also communication terminal equipment that communicate on the basis of infrared transmission. A communication system for a communication terminal equipment working according to the DECT standard is, for example, an individual transmission/reception base station operated as subscriber means at a public communication network having call control or a communication private branch exchange system having a plurality of transmission/reception base stations and an exchange means. Such communication terminal equipment according to the DECT standard can usually be logged on and operated at a plurality of such communication systems with respective access authorization. Communication terminal equipment that work according to one of the aforementioned mobile radio telephone standards are usually operated at mobile radio telephone networks. A communication system according to the aforementioned definition for mobile radio telephone terminal devices is such a mobile radio telephone network.

There are also communication terminal equipment for mobile radio telephone operation that can either be operated at two mobile radio telephone networks working according to different standards or that can be operated in an operating mode as cordless terminal equipment according to a cordless standard and that can be operated in another operating mode as mobile radio telephone terminal equipment according to a mobile radio telephone standard. Such communication

terminal equipment are usually referred to as mobile dual-mode communication terminal equipment.

When a communication terminal equipment working according to one of the aforementioned principles is respectively operated as subscriber equipment at a plurality of communication systems, then it can often be reached via different network addresses (telephone numbers) in these communication systems. A connection setup attempt addressed to one of these network addresses, accordingly, proves unsuccessful insofar as the communication terminal equipment is not logged on as reachable at a transmission/reception base station of the allocated communication system and insofar as the communication system at whose transmission/reception base station of the allocated communication system it is logged on as reachable has not communicated to any information with respect to the location of this communication terminal equipment to the communication system wherein the communication terminal equipment can be reached under this network address.

An object of the present invention is to offer a communication terminal equipment that reduces the number of such unsuccessful call attempts.

The invention achieves this object with a communication system comprising the features of claim 1 or with a communication system comprising the features of claim 2.

Beneficial developments are described in the subclaims.

A communication terminal equipment for wireless communication with one of at least two transmission/reception base stations of at least two communication systems in whose transmission/reception area the communication terminal equipment is located and at which it is logged on as being currently ready to receive has a recognition means for recognizing the communication system to which the transmission/reception base station belongs at which the communication terminal equipment has logged on as being currently ready to receive. Such a communication terminal equipment contains a control means in order to assign a network address to the recognized communication system under which the communication terminal

equipment can be currently reached and in order - when the communication terminal equipment has logged on at a transmission/reception base station as currently ready to receive - to communicate the network address under which it can be currently reached via this transmission/reception base station to a control network address stored in the
5 communication terminal equipment.

A communication terminal equipment fashioned in conformity with this aspect of the invention supplies a controller reachable via a control address with the currently valid network address, i.e. with the network address under which the communication terminal equipment and, thus, usually, the subscriber to whom this is
10 allocated can be reached.

According to another aspect of the invention, the aforementioned object is achieved by a communication terminal equipment for wireless communication with one of at least two transmission/reception base stations of at least two communication systems in whose transmission/reception area the communication terminal equipment
15 is located and at which it is currently logged on as ready to receive. This communication terminal equipment also has a recognition means for recognizing the communication system to which the transmission/reception base station belongs at which the communication terminal equipment is logged on as currently ready to receive. Inventively, this communication terminal equipment contains a control
20 means in order to assign a network address to the recognized communication system under which the communication terminal equipment can be currently reached and in order - when the communication terminal equipment has logged on at the moment at a transmission/reception base station as currently ready to receive - to communicate a control information via this transmission/reception base station to a control network
25 address stored in the communication terminal equipment for influencing the activation/deactivation status of a performance feature appertaining to the communication system to which this transmission/reception base station does not belong.

Given employment of arbitrary communication systems, such a communication terminal equipment can make it possible to subject a call directed for the communication terminal equipment to a communication system via which it cannot be currently reached to a desired handling.

- Such a call, for example, be rerouted by a performance feature of call redirection to a pre-defined telephone address or to the network address under which the communication terminal equipment can be currently reached. When only two addresses are available for selection and under which the communication terminal equipment could be reached, the rerouting destination address can be pre-set.
- However, a network address communicated from the communication terminal equipment can also be employed as rerouting destination address, the communication terminal equipment being currently reachable under this address. In this case, the control means could be fashioned in order, using the control information, to also communicate the network address under which the communication terminal equipment can be currently reached.

For example, the address of a voice mail function, of an announcement service, of a mobility server or of the terminal equipment of an agent could be predefined rerouting destination addresses according to the one, aforementioned embodiment.

- When the control means in an embodiment of such a communication terminal equipment communicates a control information for activation of the performance feature of call redirection with respect to a subscriber address under which the communication terminal equipment would be reachable via a different communication system given corresponding readiness to receive, then this control information can, for example, be directed to a control address of this communication system via which the communication terminal equipment cannot be reached at the moment in order to influence a performance feature control of this communication system. When the communication system via which the communication terminal equipment can be currently reached and the communication system via which the

communication terminal equipment cannot be reached at the moment can both be reached via a communication network such as, for example, an ISDN network, that offers a performance feature control for call redirection controllable by the terminal equipment, the control means can communicate the control information to this

5 performance feature control as well. Over and above this, the delivery of incoming calls can also be undertaken by a mobility server that respectively knows the current location of the terminal equipment. In this case, the network address under which the terminal equipment is currently reachable or the control information would be communicated to such a mobility server. Such a mobility server can be connected

10 both to one of the communication systems as well as to a communication network.

A beneficial development of an inventive communication terminal equipment accordingly contains a memory for storing a control network address of a mobility server.

A further development of an inventive communication terminal equipment

15 contains a memory for storing control network addresses of a plurality of communication systems and a selection means for selecting at least one control network address of a communication system to which the transmission/reception base station at which the communication terminal equipment has currently logged on as ready to receive does not belong.

20 As a result thereof, the control network addresses of all communication systems with respect whereto the communication terminal equipment undertakes initiations dependent on its current location are available in the communication terminal equipment. Potentially required updatings in the individual communication systems are not required. Each communication system only needs to know the

25 communication terminal equipment and only this need be adapted to the changing situations.

The invention is explained in greater detail below with reference to the figure and on the basis of an exemplary embodiment.

The figure shows a schematic block illustration of an inventive communication terminal equipment with communication systems connectable via a communication network.

The figure shows a communication terminal equipment KE having a
5 control means CPU, a program memory PMK, a memory IDKE for a communication terminal equipment identifier and a memory NAM for network addresses under which the communication terminal equipment KE can be reached and also contains a control network address.

Moreover, two communication systems KS1, KS2 are shown in the figure.
10 Each of these communication systems KS1, KS2 contains a control means CPU1, CPU2, a memory for a data base DB1, DB2 for a subscriber-relevant data, a program memory PM1, PM2, a memory ID1, ID2 for a communication system identifier and a performance feature controller LS1, LS2. The performance feature controller need thereby not - as shown in the figure - be contained in the call control RS1, RS2 but
15 can also work parallel thereto. One of the communication systems KS1 contains two transmission/reception base stations BS11, BS12 in order to wirelessly communicate with the communication terminal equipment KE. A radio connection is shown in the figure between the transmission/reception base station BS11 and the communication terminal equipment KE.

20 The communication system KS2 contains a single transmission/reception base station BS2. Both the communication system KS1 as well as the communication system KS2 are respectively coupled to a communication network KN via a network interface NIF1, NIF2 and can thus be connected to one another. The communication network KN contains a performance feature controller LMSC, which is not
25 compulsory for the invention. A mobility management controller in the form of a mobility server MMS that is coupled to the communication network KN is also shown in the figure in broken lines. This mobility management controller MMS can be optionally employed and is not compulsory for the invention. Moreover, this mobility

management controller MMS can also be contained within one of the communication systems KS1, KS2 or can be connected to such a communication system.

- When the communication terminal equipment KE in the transmission/reception area of the transmission/reception base station BS11 of the
- 5 communication system KS1 has logged on at the communication system KS1 as currently reachable via this transmission/reception base station BS11, then a recognition means realized by the control means CPU and the program memory PMK recognizes - with reference to a communication system identifier communicated from the transmission/reception base station BS11 and stored in the memory ID1 or with
- 10 reference to an identifier of the transmission/reception base station BS11 - the communication system KS1 to which the transmission/reception base station BS11 belongs. The control means CPU communicates the network address via which the communication terminal equipment KE can be reached via the network interface NIF1 and the communication network KN to a control network address. The network
- 15 address via which the communication terminal equipment KE can be reached and the control network address are stored in the network address memory NAM.

- In a first development of the exemplary embodiment, the address of the performance feature controller LMSC of the communication network KN can be provided as control network address in order to activate the performance feature of
- 20 call redirection with respect to the calls directed to the communication terminal equipment KE via the communication system KS2.

- In a second development of the exemplary embodiment, the address of the performance feature controller LS2 of the communication system KS2 can be provided as control network address in order to activate the performance feature of
- 25 call redirection with respect to the calls directed to the communication terminal equipment KE via the communication system KS2.

In a third development of the exemplary embodiment, the address of the mobility server MMS can be provided as control network address in order to deliver calls directed to the communication terminal equipment KE via the communication

system KS2 to the communication terminal equipment KE via the communication system KS1.